

CLAIMS

What Is Claimed Is:

- 1 *Sub 1* 1. A method of installing a spacer in a panel for mounting a fastener,  
2 comprising the steps of:  
3 making a hole in the panel;  
4 inserting a metal spacer having a height greater than a thickness of the  
5 panel in the hole, the spacer has an aperture, and an entrance rim extending about  
6 the aperture and above an upper surface of the panel; and  
7 exerting a force on the entrance rim to force the entrance rim into the  
8 hole to position an upper edge of the entrance rim flush with the upper surface of  
9 the panel adjacent a perimeter of the hole while forcing radially outward a  
10 portion of the spacer within the panel.
- 1 2. The method of Claim 1, wherein the entrance rim is cylindrical and the  
2 force is applied by a setting tool to deform the entrance rim flush with the upper surface  
3 of the panel.
- 1 3. The method of Claim 1 further including providing an internal sealing  
2 coating positioned annularly below the entrance rim.
- 1 4. The method of Claim 1 further including a sealing coating on an exterior  
2 surface of the spacer to seal the perimeter of the hole with the entrance rim.
- 1 5. The method of Claim 1, wherein the spacer has a flange on a side  
2 opposite from the entrance rim, the method further includes the step of adhering the  
3 flange to a bottom surface of the panel.

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1 6. A method of installing a spacer in a panel, comprising the steps of:

2 inserting a spacer into a hole in the panel, the hole being larger than an  
3 upper diameter of the spacer, the spacer having a height greater than a thickness  
4 of the panel so that an entrance rim of the spacer extends above an upper surface  
5 of the panel, and the spacer has a lower hole engaging surface to engage a  
6 perimeter of the hole for alignment of the spacer in the hole; and

7 exerting a force on the entrance rim to force the entrance rim downward  
8 into the hole until an upper surface of the entrance rim is flush with the upper  
9 surface of the panel adjacent the hole and a portion of the entrance rim is forced,  
10 beneath the upper surface of the panel, beyond a perimeter of the hole.

1 7. The method of Claim 6 further comprising the step of inserting a sealing  
2 compound into the hole by providing it about an outer surface of the spacer and sealingly  
3 deforming the sealing compound while exerting the force on the entrance rim.

1 8. An improved spacer for mounting within a panel of a predetermined  
2 thickness with a hole, comprising:

3 a metal body member having a central aperture;

4 a lower flange member extending radially outward from the body  
5 member;

6 a serrated outer surface of the metal body member adjacent the lower  
7 flange member;

8 an upper rim member extending upward from the body member and  
9 concentric with the central aperture, the rim member having a larger inner diameter than  
10 a diameter of the central aperture with an inner flange extending from the rim member to

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11 the central aperture, a height of the spacer relative to the panel predetermined thickness  
12 is such to position an upper edge of the upper rim member above an upper panel surface  
13 when the lower flange member is in contact with a lower panel surface adjacent the hole;  
14 and

15 a first sealing compound positioned adjacent the upper rim member on an  
16 outer surface of the spacer so that it is positioned adjacent an upper panel surface when  
17 the lower flange member is in contact with a lower panel surface whereby the first  
18 sealing compound can seal between the hole and the spacer when the spacer is mounted  
19 in the panel.

1 (9.) A spacer for mounting within a hole in a panel, comprising:  
2 a metal body member with a rim member extending upward from the  
3 body member;  
4 a hole engaging surface on the body member; and  
5 a lower flange extending outward from the body member, the hole  
6 engaging surface initially aligns the spacer within the hole and the rim member has an  
7 inner wall surface with an annular groove positioned to enable an upper edge of the rim  
8 member to be forced downward while a portion of the rim member extends outward  
9 whereby the upper edge of the rim member can be mounted flush in a hole in a panel  
10 while the rim member extends radially outward beneath a surface of the panel.

1 10. The spacer of Claim 9 wherein an outer wall surface of the rim member  
2 is coated with a sealing compound.

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1        (11.)    The spacer of Claim 10 wherein the sealing compound is selected from  
2        one of a silicone resin and a thermoplastic resin.

1            12.    The spacer of Claim 9 wherein a second sealing compound is positioned  
2        within the rim member.

1            13.    The spacer of Claim 9 wherein a flange member is connected to the body  
2        members on an opposite side from the rim member.

1            14.    The spacer of Claim 13 wherein a central aperture extends through the  
2        body member and the flange member.

1            15.    The spacer of Claim 9 including potting holes extending through a lower  
2        surface of the spacer.

1        (16.)    A combination floor panel and spacer, comprising:  
2                    a sandwich panel having an upper planar face plate and a lower planar  
3        face plate separated by a core structure, a hole extending through the sandwich panel;  
4                    a spacer having a body member and a rim member extending upward  
5        from the body member, wherein the rim member has an annular groove to assist in  
6        permitting the rim member to be deformed outward when flush mounted within the  
7        sandwich panel;  
8                    a hole/engaging surface on the body member aligns the spacer within the  
9        hole; and  
10                  an upper edge of the rim member is positioned adjacent a perimeter of  
11        the hole and is flush with a surface of the upper planar face plate, a portion of the rim

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12 member is extended radially outward from the flush upper edge of the rim member  
13 below the upper planar face plate.

1 17. The combination floor panel and spacer of Claim 16 further including a  
2 first sealing compound providing a water tight seal between the perimeter of the hole and  
3 the upper edge of the rim member.

1 18. The combination floor panel and spacer of Claim 17 wherein the first  
2 sealing compound is selected from one of a silicone resin and a thermoplastic resin.

1 19. The combination floor panel and spacer of Claim 16 wherein a second  
2 sealing compound is positioned within the rim member to enable a sealing contact with a  
3 fastener.

1 20. The combination floor panel and spacer of Claim 16 wherein the hole  
2 engaging surface on the body member is an annular serrated surface.

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